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Answer to Case of the Month #145 Lemierre's Syndrome

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Clinical Presentation

A 30-year-old woman presented to the emergency department with a 4-day history of pleuritic chest pain and dyspnoea and a 1-day history of haemoptysis. She had been well until 2 weeks ago when she attended her general practitioner with headaches and a sore throat and was treated with anti-inflammatory medication and a course of antibiotics with improvement of symptoms. On examination, the patient was tachypnoeic with a respiratory rate of 22 breaths per minute and had a pyrexia with a temperature of 38.3°C. Physical examination was otherwise unremarkable. Laboratory investigation showed a leucocytosis with a white cell count of 14×10^9/L and an increased C-reactive protein of 109 mg/L. The patient went on to have a contrast-enhanced computed tomography of her neck and thorax (Figures 1–3).

Key Words: Lemierre's syndrome; Internal jugular vein thrombosis; Septic emboli; Oropharyngeal infection.

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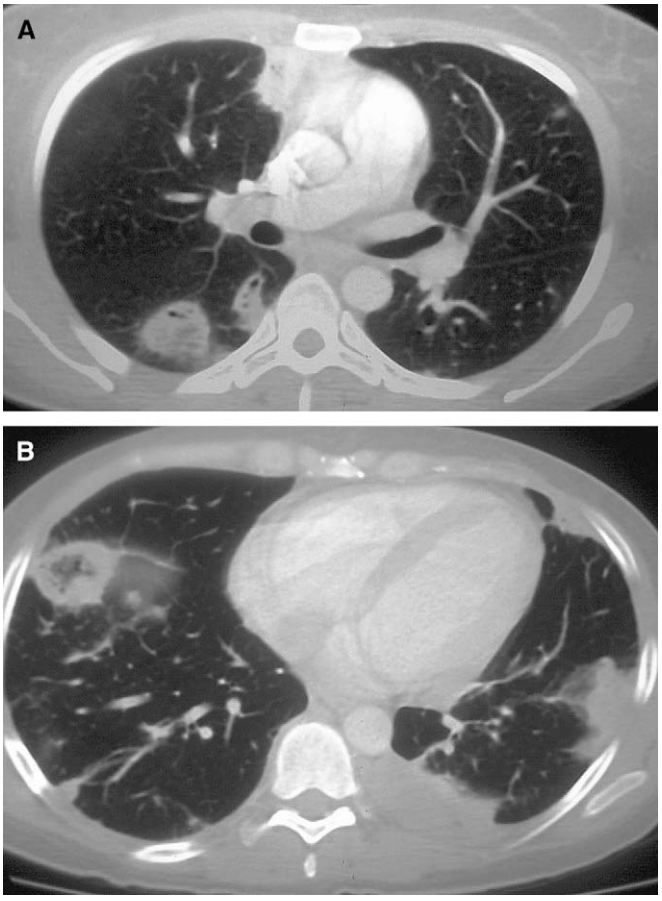

Figure 1. (A and B) Representative images from a transverse contrast-enhanced computed tomography through the thorax utilising lung windows. There are multiple cavitating lesions present throughout both lungs. Some focal atelectasis also is seen within the left base.

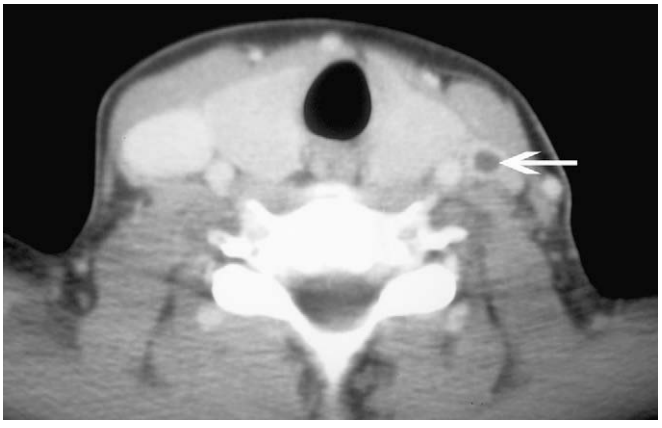

Figure 2. Transverse contrast-enhanced computed tomography through the neck at the level of the thyroid gland with evidence of thrombosis in the left internal jugular vein (arrow).

Diagnosis

Lemierre's syndrome.

Figure 3. Transverse contrast-enhanced computed tomography through the neck showing thrombosis of the left internal jugular vein as well as a small abscess posterior to the cricoid cartilage (arrow).

Discussion

Lemierre's syndrome is an uncommon life-threatening illness caused by the anaerobic bacterium *Fusobacterium necrophorum*. In 1936, Dr Andre Lemierre reviewed a group of 20 otherwise healthy patients who developed pharyngotonsillitis or peritonsillar abscess that was commonly followed by signs of ipsilateral thrombophlebitis of the internal jugular. Within a week of these patients presenting with nonspecific symptoms of upper respiratory tract infection and they showed evidence of bacteraemia [1]. In clinically appropriate settings, evidence of internal jugular vein thrombosis with computed tomography evidence of septic emboli should make the radiologist consider the diagnosis of Lemierre's syndrome [2].

Lemierre's syndrome is characterized by a primary oropharyngeal infection with evidence of septic thrombophlebitis, and metastatic septic embolisation [3]. The incidence of Lemierre's syndrome is approximately one in a million [4]. In the preantibiotic era this disease was relatively common. With the advent of more widespread utilisation of antibiotics, the number of cases being reported in the 1960s and 1970s decreased dramatically. However, there has been a marked increase in the number of cases since the 1990s. Many reasons have been postulated for this. These include physicians being discouraged from prescribing antibiotics for sore throats, improved laboratory detection of the causative organism, and the emergence of erythromycin-resistant *Fusobacterium necrophorum* [4].

Although *Fusobacterium necrophorum* is the most common pathogen in Lemierre's syndrome, other species such as *Bacteroides*, *Streptococcus*, *Lactobacillus*, and other *Fusobacterium* species also have been implicated. Frequently, exudative tonsillitis is present but other findings such as ulcers or hyperaemia of the pharynx may be seen [5]. The anatomy of

the lateral pharyngeal space allows invasion of the internal jugular vein either by direct extension from lymphatics or by haematogenous spread from the peritonsillar vessels [3]. Within a week of initial presentation patients develop rigors and high fevers and have evidence of metastatic abscesses, most commonly involving the pulmonary system. Other sites of septic embolisation that have been reported include bone, joints, the liver, the peritoneum, and the kidneys [1].

Signs and symptoms of pharyngeal infection may have resolved by the time internal jugular vein (IJV) thrombosis or metastatic infection develops, even without antibiotic therapy. Pain and swelling or induration at the angle of the jaw and along the sternocleidomastoid muscle may occur but the thrombosed IJV is rarely palpable [6].

Radiologic investigation is instrumental in reaching a diagnosis of Lemierre's syndrome. Ultrasonography can be used initially to show internal jugular vein thrombosis [7,8]. However, the diagnosis now is made more commonly on computed tomography with the combination of cavitating lung lesions as well as showing thrombus within the jugular vein [9,10].

The mainstay of treatment is intravenous antibiotics directed at the anaerobic organism. Prolonged antibiotic therapy appears to be necessary for the eradication of the infection because of its endovascular nature [6]. While receiving antibiotic therapy, patients must be observed closely for signs of continued sepsis, propagation of thrombus, or metastasis infection [5]. The role of anticoagulation therapy in Lemierre's syndrome remains controversial because the outcome of most patients is good without it [5].

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